

1                           **I CLAIM:**

2         1. A robot adapted to climb stairs and obstacles,  
3     said robot comprising:  
4         a left body section;  
5         a right body section;  
6         said left and right body sections forming a robot body;  
7         a pivotable tail boom mounted between the left and the  
8     right body section;  
9         a plurality of support legs affixed to each body  
10    section, wherein the robot body is supported above a ground  
11    surface;  
12         a motor housed in the robot body;  
13         wherein the motor powers the tail boom downward in an  
14    obstacle climbing mode against a ground surface, thereby  
15    rotating a rear end of the robot body upward and forward to  
16    accomplish a flipping (panning) of the robot body, thereby  
17    effectuating a positioning of a pair of rear support legs up  
18    and over a first obstacle; and  
19         wherein the motor again powers the tail boom downward  
20    and repeats the panning of the robot body over a second  
21    obstacle.

22

23         2. The robot of claim 1, wherein the plurality of

1 support legs further comprise a left forward and rearward  
2 set of wheels and a right forward and rearward set of  
3 wheels, all said wheels having a driving source mounted  
4 inside the robot body, thereby enabling the robot to travel.

5

6       3. The robot of claim 2, wherein the left set of wheels  
7 has a motive power source, and the right set of wheels has a  
8 motive driving source, thereby enabling a turning of the  
9 robot by varying a speed of the left and right set of  
10 wheels.

11

12       4. The robot of claim 3, wherein the left and the  
13 right bodies are each a separate housing interconnected by a  
14 central axle, thereby providing an independent movement of  
15 each body about the center axle.

16

17       5. The robot of claim 4, wherein the motive driving  
18 source further comprises a left and a right motor housed in  
19 their respective body sections.

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21       6. The robot of claim 4 further comprising a remote  
22 signal receiver and a control processor, wherein the remote

1 signal carries control information including speed,  
2 direction and a stair climbing mode, wherein the stair  
3 climbing mode comprises a locking of the left and the right  
4 bodies in a fixed position relative to one another, and the  
5 tail boom is lowered downward to pan the robot body while  
6 all the wheels are powered forward.

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8       7.     The robot of claim 6 further comprising a video  
9 camera having a transmitter for its signal.

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11       8.     The robot of claim 7, wherein the video camera is  
12 mounted on the tail boom.

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14       9.     The robot of claim 8 further comprising a  
15 microphone and a speaker and an audio transmitter.

16

17       10.    The robot of claim 7 further comprising a payload  
18 area.

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20       11.    The robot of claim 8, wherein the tail boom has  
21 variable length mode of remote control operation.

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23       12.    The robot of claim 11, wherein the variable length  
24 mode further comprises a telescoping tail boom having a worm  
25 gear drive.

26

27       13.    The robot of claim 7 further comprising a remote  
28 control unit having a user headgear heads up display and a

1 joystick control module.

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3       14. The robot of claim 13, wherein the robot and the  
4 remote control unit each have a separate battery power  
5 source.

6

7       15. The robot of claim 14, wherein the robot further  
8 comprises a speaker and a microphone, and the user headgear  
9 further comprises a microphone and a speaker sending a voice  
10 signal to the robot via the remote control unit.

11

12       16. The robot of claim 7 further comprising a remote  
13 control unit having a video screen and a control panel to  
14 control the robot.

15

16       17. The robot of claim 2 further comprising an  
17 environmental sensor and a transmitter for sending the  
18 environmental sensor signal to a remote receiver.

19

20       18. The robot of claim 8, wherein the tail boom has a  
21 remote controllable positioning mechanism.

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23       19. The robot of claim 4, wherein the robot has a  
24 positive buoyancy in water, and the wheels have a paddle  
25 type extension.

26

27       20. A robot comprising:  
28 a left clam shell housing means functioning to house a front

1 and a rear wheel and a motor for powering the left wheels,  
2 and providing a connection to an interconnect axle;  
3 a right clam shell housing means functioning to house a  
4 front and a rear wheel and a motor for powering the right  
5 wheels and providing a connection to the interconnect axle,  
6 thereby enabling an independent axial motion between the  
7 left and the right clam shell housing means when traversing  
8 a rough terrain; and

9 a tail boom means mounted between the left and the right  
10 clam shell housing means functioning to controllably push  
11 down against a ground surface causing the left and the right  
12 clam shell housings to flip (pan), thereby placing the left  
13 and the right rear wheels forward and on top of an obstacle,  
14 thus defining a stair climbing mode.

15

16 21. The robot of claim 20, wherein the stair climbing  
17 mode further comprises a locking of the left and the right  
18 clam shell housings into a fixed position relative to one  
19 another.

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21 22. The robot of claim 21 further comprising an on  
22 board video camera with a transmitter.

23

24 23. The robot of claim 22 further comprising a remote  
25 control station having a receiver for the video camera  
26 signal and a control panel to control the robot.

27

28 24. The robot of claim 23, wherein the tail boom means

1 further comprises a mount for housing the video camera.

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3       25. The robot of claim 24, wherein the tail boom has  
4 an independent position controller controlled by the remote  
5 control station.

6

7       26. The robot of claim 25, wherein the remote control  
8 station further comprises a user headgear mounted heads up  
9 display.

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11       27. The robot of claim 26, wherein each of the robot  
12 and the remote control station has a battery pack.

13

14       28. The robot of claim 21 further comprising a payload  
15 area.

16

17       29. The robot of claim 20, wherein the tail boom means  
18 further comprises a motor mounted either in the right or the  
19 left clam shell housing means.

20

21       30. A surveillance robot comprising:  
22           a robotic body having a video camera;  
23           a stair stepping mechanism housed in the robotic body;  
24           a left, right, forward, reverse direction mechanism  
25 housed in the robotic body;  
26           a remote control station having a communication module

1 to control the stair stepping, left, right, forward and  
2 reverse directions of the robot;  
3 wherein the remote control station further comprises a  
4 user headgear assembly having a heads up display to receive  
5 a signal from the video camera and display it in front of  
6 the user's eyes; and  
7 wherein the stair stepping mechanism further comprises  
8 a left clamshell and a right clamshell body segment  
9 interconnected by a central axle, a tail boom mounted  
10 between the left and the right body segment on the central  
11 axle, said tail boom having a power source to force it down  
12 against a ground surface causing the robotic body to flip  
13 (pan), thereby effecting an upward, climbing motion.

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15 31. The robot of claim 30, wherein the left and the  
16 right clamshell bodies each have a motor to power a front  
17 and rear wheel in each respective clamshell body segment.

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